SEQUENCE LISTING

<110> Brooks, Alan R.
      Deng, Gary G.
      Rubanyi, Gabor M.

<120> Novel Estrogen-Regulated G Protein Gamma Subunit:
      Compositions and Methods of Use

<130> 015303-000510US

<140> US 09/803,472
<141> 2001-03-10

<150> US 60/188,460
<151> 2000-03-10

<160> 5

<170> PatentIn Ver. 2.1

<210> 1
<211> 72
<212> PRT
<213> Mus musculus

<220>
<223> Amino acid sequence of mouse G-gamma 12 protein
      subunit

<400> 1

Met Ser Ser Lys Thr Ala Ser Thr Asn Ser Ile Ala Gln Ala Arg Arg
 1   5   10   15

Thr Val Gln Gln Leu Arg Leu Glu Ala Ser Ile Glu Arg Ile Lys Val
                20   25   30

Ser Lys Ala Ser Ala Asp Leu Met Ser Tyr Cys Glu Glu His Ala Arg
            35   40   45

Ser Asp Pro Leu Leu Met Gly Ile Pro Thr Ser Glu Asn Pro Phe Lys
        50   55   60

Asp Lys Lys Thr Cys Ile Ile Leu
65   70

<210> 2
<211> 4147
<212> DNA
<213> Mus musculus

<220>
<223> cDNA sequence for mouse G-gamma 12 protein
      subunit, variant 1

<400> 2
ctagaattca gcggccgctg aattctaggc gacgacggcg aagagtgagt gccaaggttc 60
atatgggaag gactttgggg tgagcatctt ctctatttcc agctggcttt tctgattttc 120
agaaagaaga ctcatcaaag atgtccagca agacggcaag caccaacagc atagcccaag 180
ccaggagaac tgtgcagcag ctgagattgg aagcctccat cgaaagaata aaggtctcaa 240

1

```
aagcatcagc agacctgatg tcatactgtg aggagcatgc ccggagcgac cccctgctga 300
tgggcatacc gacctcagaa aacccgttca aggataagaa gacctgcatc atcttatagt 360
ggaccaggaa gcgccccttg cctcttaacg caaaccacag cagcaacctg aagggattcc 420
ttcagcttac ctggtaacca cagctagtaa ctaaaacacc cttctctcgg aataatagac 480
cctgaagtct ctcttttca agttgtcctt tcttcaccct ttactgattt aatacagaat 540
aacaatctta ttttctattt gataactatg gtatcatatt gggttactgt ataaggaaaa 600
tggcagggga gttgtgggaa gcttgtcttt acaaatata attgattaag atatgtcaag 660
acctacattg tctaagcacc ggcaaattaa aatgtcgaga atcacttcag tcaaaaccct 720
ttatattctg ttcttaataa tgtttgtgcc aacctatatc ccatgtaagg gatctgggga 780
ggaggcatgt gtctacaacc ataccttttt gcactatggg cactaaccac cctgaaactt 840
cctgcggtag ctccctccct tcagagttac atcattatcc tgactctgtg taggtaaatt 900
tccgtgaaat ttttgtacaa aaaaaaggta atgaaagaac gttgcaaaga tcatctgcat 960
tataatgagt tgatgctgtt ctcactcctc tcttggaatt gtgctggccc cttagtctac 1020
aataaactgt gccaattaaa aacctaaggc taaaactgaa agccctttga tggggtctta 1080
actcatatca gtcatttggg cttctctgat cctgaggcta agaaagggga agagaccctc 1140
aggaggcagc ttccactcca gggctcttga tctctgctgg attgggggtg gccacctcag 1200
aaacttccac cctcatgact ggaatggaag aggggaccga gagcctcaca atctcggaga 1260
gggaggagaa attctaaaaa acagctgctc tcctgcgccc agcttcacag gcagccctgc 1320
ccctttctcc tcaccagcat ggtacctgcc cttactgcta gagcagctgc ttgtagaggg 1380
acattccctc cttcccagtt ttaactggtg gaccacagtg gggggaaaaa cattcaagcg 1440
atataaagac acttgggctc tttgcagatg cctatacttc caacactacc atgtccacaa 1500
accaccctgg gggagggccc ttccaaaggg aggcttgcta gtttcagcgt ctagcagttg 1560
ggtcctcact tttactccaa ttgtgaaaat agcccacgta ccctcgcagt gtccagtagg 1620
gatcccagag gcacataacc aagaaaggat tttgactttg tcacagtgac tatttaaaat 1680
aatctattcg aagtccaaac caaacacaaa gcctgtgata ttttaggtta ttaaggtaac 1740
tgctaatgaa ggattttaaa aagtgtcctc aaaaaggact tagccccggg agttgtttat 1800
aaaatttccc ccacttgtat acagtgtgca ctaaaagaaa atgtatttta atatctaatg 1860
cctgggctct gagcgtcatg cttcttggtg gtaaacatgc agtcctgttc ctaagtgact 1920
cagaggcatc agaatttctc cacgttaccc atctgcttgg cactcggaac tgagcgtgtg 1980
aaatccatag cgctgcccac aacctgttct cactgcttag ctcccagctg gattaaagac 2040
acctgctcag gcgggagaga gagagagaga gcgagctttt accttggaaa aggtaaagat 2100
ggaaatgtac accaaaaaag acaattttta catttaatgg aacattcttt tttttacaa 2160
gtatatttt ctactgatag tttcagaaca ctaatcttat attcactcta atcttaaaca 2220
tgtttctttta aatatttata aggcagttta ttacagaata ttttcatgca atcatgtgca 2280
cattattggt agcaaacata gtatatcctt tagtacttta gcatattttt gttaaaatac 2340
ttttaatggt aagaaatgaa cttgaggtcc caggaggttt tgttgccttt tcattgatta 2400
gagacaataa atatcttgta acttcctaac cagatctgag ctgtgctcac aataataata 2460
atgaaatcag attctttgat gctggactca ggagggaaat cattagccaa ctgttgactt 2520
acttatagct agatgtctat gtgagaaagt ataatatata tatatacaca tatatatgac 2580
atgtaagagt cacttttatt tatctgtctt tgttcactta tgaagccggt aactgcagca 2640
gtatgttggt gatgtcatga tgcacagaag tcccatgtgg agtgtttttc ccacactgac 2700
aacttggcct cctttctgtg tgttcagtct gttgtctgaa ctaacactcc cgcgagcact 2760
atactcttta tactctgatc cccctagttc atcttaaatt tgtctgtggc cctggcaaga 2820
tagcgtacac aagattccat gactccagag catcttgaag aaacatacat attttgaaag 2880
aggggaaatg tagcagatag ttcacaagct gcgggttgta gctaaatatt ccatttcttt 2940
gaaatcatgt ttctaaattc tttaccatca gaaagaaaag gagtgtcata cactttcaag 3000
ggaaggcttg gtctgcgttt tctgtgtttg gattattttt atactttgct gatctttaag 3060
ctatccatgg gggaaatttt ataccaacga gttaataatt ctcattcatc gtttacacaa 3120
tgtaacatgt gtcatactgg ggccagcgag atggctcagt aggtaaaggt gcttgatgct 3180
aagcccggca gcctgtgttt catctacagg atgcacaaca taaagaaaa gatctgattc 3240
ccacaggttc tcttctgacc tacacacaca cacactaaaa taacatttaa aaatatgtgc 3300
caaattatat ttgttcgggt gccaccttcc accagcttac cactacggta gaactgtcaa 3360
attcatctcc ctgaatttgt cttaaagggg tgtccatgca caggcccaag agtcacctcc 3420
aatgaaataa atgtaatact gaagtatgcc atgatgtttg ttgtttttctt tcatcgtaag 3480
cctgtaagca ggaaaaatac gtcaaatcag atagaataga gcatttacca gtggtcgatg 3540
gcctggtcag tcctgtgccg ggtgacttag gaccaggcac gtcagctctc tgagcctccc 3600
cttcccttgt tgtcacaagg gaatagaagc agaagaagct gagagcctcc ctattcccag 3660
atgccctggt ggaatgacct gcctctctgc cgtttctgcc aacgtgttgg tgctataagc 3720
tgcttcaaat accagtttgt ctgtagtgtg tactcaccta atcacttgtt atccagtgcc 3780
tgttctaggt ttatggactt aactatttct gtgatgtttc attttttagcc atgttaactc 3840
ctaacacata ttctcttatg tctcagtaaa gtttcatttg ataagttgtt gagattctgt 3900
```

2

```
tatttgataa tattcttcgg ctgtccatcc agcatcttaa tcactttaaa actgtgattg 3960
ttattttgcaa ctctgttctt tggaaagaat aaaagcattt tttttcactt gctaacatgc 4020
tcacaaatgt gagagaagag tcattaaaag ctttacttac tgggtcagtg cgtcattgac 4080
tcctttctgt gttttgccca ataaattaat aaaagaccaa aaaaaaaaaa aaaaaaaaa 4140
aaaaaa                                                            4147


<210> 3
<211> 4175
<212> DNA
<213> Mus musculus

<220>
<223> cDNA sequence of mouse G-gamma 12 protein subunit,
      variant 2

<400> 3
gcagcggcgg cggcggcgac gacggcgaag agttcatatg ggaaggactt tggggtgagc 60
atcttctcta tttccagctg gcttttctga ttcaccccac catttaaaac ctggaggcac 120
tgggccacac aaagccttgc tgattttcag aaagaagact catcaaagat gtccagcaag 180
acggcaagca ccaacagcat agcccaagcc aggagaactg tgcagcagct gagattggaa 240
gcctccatcg aaagaataaa ggtctcaaaa gcatcagcag acctgatgtc atactgtgag 300
gagcatgccc ggagcgaccc cctgctgatg ggcataccga cctcagaaaa cccgttcaag 360
gataagaaga cctgcatcat cttatagtgg accaggaagc gcccttgcc tcttaacgca 420
aaccacagca gcaacctgaa gggattcctt cagcttacct ggtaaccaca gctagtaact 480
aaaacaccct tctctcggaa taatagaccc tgaagtctct cttttcaag ttgtcctttc 540
ttcacccttt actgatttaa tacagaataa caatcttatt ttctatttga taactatggt 600
atcatattgg gttactgtat aaggaaaatg gcaggggagt tgtgggaagc ttgtctttac 660
aaaatataat tgattaagat atgtcaagac ctacattgtc taagcaccgg caaattaaaa 720
tgtcgagaat cacttcagtc aaaaacctt atattctgtt cttaataatg tttgtgccaa 780
cctatatccc atgtaaggga tctggggagg aggcatgtgt ctacaaccat acctttttgc 840
actatgggca ctaaccaccc tgaaacttcc tgcggtagct ccctcccttc agagttacat 900
cattatcctg actctgtgta ggtaaatttc cgtgaaattt ttgtacaaaa aaaaggtaat 960
gaaagaacgt tgcaaagatc atctgcatta taatgagttg atgctgttct cactcctctc 1020
ttggaattgt gctggcccct tagtctacaa taaactgtgc caattaaaaa cctaaggcta 1080
aaactgaaag ccctttgatg gggtcttaac tcatatcagt catttgggct tctctgatcc 1140
tgaggctaag aaaggggaag agaccctcag gaggcagctt ccactccagg gctcttgatc 1200
tctgctggat tgggggtggc cacctcagaa acttccaccc tcatgactgg aatggaagag 1260
gggaccgaga gcctcacaat ctcggagagg gaggagaaat tcttaaaaac agctgctctc 1320
ctgcgcccag cttcacaggc agccctgccc ctttctcctc accagcatgg tacctgccct 1380
tactgctaga gcagctgctt gtagagggac attccctcct tcccagtttt aactggtgga 1440
ccacagtggg gggaaaaaca ttcaagcgat ataaagacac ttgggctctt tgcagatgcc 1500
tatacttcca acactaccat gtccacaaac caccctgggg gagggcccctt ccaaagggag 1560
gcttgctagt ttcagcgtct agcagttggg tcctcacttt tactccaatt gtgaaaatag 1620
cccacgtacc ctcgcagtgt ccagtaggga tcccagaggc acataaccaa gaaaggattt 1680
tgactttgtc acagtgacta tttaaaataa tctattcgaa gtccaaacca aacacaaagc 1740
ctgtgatatt ttaggttatt aaggtaactg ctaatgaagg attttaaaaa gtgtcctcaa 1800
aaaggactta gccccgggag ttgtttataa aatttccccc acttgtatac agtgtgcact 1860
aaaagaaaat gtattttaat atctaatgcc tgggctctga gcgtcatgct tcttggtggt 1920
aaacatgcag tcctgttcct aagtgactca gaggcatcag aatttctcca cgttacccat 1980
ctgcttggca ctcggaactg agcgtgtgaa atccatagcg ctgcccacaa cctgttctca 2040
ctgcttagct cccagctgga ttaaagacac ctgctcaggc gggagagaga gagagagagc 2100
gagcttttac cttggaaaag gtaaagatgg aaatgtacac caaaaaagac aattttttaca 2160
tttaatggaa cattcttttt ttttacaagt atattttct actgatagtt tcagaacact 2220
aatcttatat tcactctaat cttaaacatg tttctttaaa tatttataag gcagtttatt 2280
acagaatatt ttcatgcaat catgtgcaca ttattggtag caaacatagt atatcctttta 2340
gtactttagc atatttttgt taaatactt ttaatggtaa gaaatgaact tgaggtccca 2400
ggaggttttg ttgccttttc attgattaga gacaataaat atcttgtaac ttcctaacca 2460
gatctgagct gtgctcacaa taataataat gaaatcagat tctttgatgc tggactcagg 2520
agggaaatca ttagccaact gttgacttac ttatagctag atgtctatgt gagaaagtat 2580
aatatatata tatacacata tatatgacat gtaagagtca cttttatttta tctgtctttg 2640
```

3

```
ttcacttatg aagccggtaa ctgcagcagt atgttggtga tgtcatgatg cacagaagtc 2700
ccatgtggag tgtttttccc acactgacaa cttggcctcc tttctgtgtg ttcagtctgt 2760
tgtatgaact aacactcccg cgagcactat actctttata ctctgatccc cctagttcat 2820
cttaaatttg tctgtggccc tggcaagata gcgtacacaa gattccatga ctccagagca 2880
tcttgaagaa acatacatat tttgaaagag gggaaatgta gcagatagtt cacaagctgc 2940
gggttgtagc taaatattcc atttctttga aatcatgttt ctaaattctt taccatcaga 3000
aagaaaagga gtgtcataca ctttcaaggg aaggcttggt ctgcgttttc tgtgtttgga 3060
ttatttttat actttgctga tctttaagct atccatgggg gaaattttat accaacgagt 3120
taataattct cattcatcgt ttacacaatg taacatgtgt catactgggg ccagcgagat 3180
ggctcagtag gtaaaggtgc ttgatgctaa gcccggcagc ctgtgtttca tctacaggat 3240
gcacaacata aaagaaaaga tctgattccc acaggttctc ttctgaccta cacacacaca 3300
cactaaaata acatttaaaa atatgtgcca aattatattt gttcgggtgc caccttccac 3360
cagcttacca ctacggtaga actgtcaaat tcatctccct gaatttgtct taaagggggtg 3420
tccatgcaca ggcccaagag tcacctccaa tgaaataaat gtaatactga agtatgccat 3480
gatgtttgtt gttttctttc atcgtaagcc tgtaagcagg aaaaatacgt caaatcagat 3540
agaatagagc atttaccagt ggtcgatggc ctggtcagtc ctgtgccggg tgacttagga 3600
ccaggcacgt cagctctctg agcctcccct tcccttgttg tcacaaggga atagaagcag 3660
aagaagctga gagcctccct attcccagat gccctggtgg aatgacctgc ctctctgccg 3720
tttctgccaa cgtgttggtg ctataagctg cttcaaatac cagtttgtct gtagtgtgta 3780
ctcacctaat cacttgttat ccagtgcctg ttctaggttt atggacttaa ctatttctgt 3840
gatgtttcat ttttagccat gttaactcct aacacatatt ctcttatgtc tcagtaaagt 3900
ttcatttgat aagttgttga gattctgtta tttgataata ttcttcggct gtccatccag 3960
catcttaatc actttaaaac tgtgattgtt atttgcaact ctgttctttg gaaagaataa 4020
aagcattttt tttcacttgc taacatgctc acaaatgtga gagaagagtc attaaaagct 4080
ttacttactg ggtcagtgcg tcattgactc ctttctgtgt tttgcccaat aaattaataa 4140
aagaccaaaa aaaaaaagaa aaaaaaaaa aaaaa                                4175
```

<210> 4
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<223> Amino acid sequence of human G-gamma 12 protein
      subunit

<400> 4
```
Met Ser Ser Lys Thr Ala Ser Thr Asn Asn Ile Ala Gln Ala Arg Arg
 1               5                  10                  15

Thr Val Gln Gln Leu Arg Leu Glu Ala Ser Ile Glu Arg Ile Lys Val
                20                  25                  30

Ser Lys Ala Ser Ala Asp Leu Met Ser Tyr Cys Glu Glu His Ala Arg
            35                  40                  45

Ser Asp Pro Leu Leu Ile Gly Ile Pro Thr Ser Glu Asn Pro Phe Lys
        50                  55                  60

Asp Lys Lys Thr Cys Ile Ile Leu
 65                  70
```

4

<210> 5
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: General
      epitope tag

<400> 5
Asp Tyr Lys Asp Asp Asp Asp Lys
1   5